Cheese powder - a natural flavour and taste enhancer for numerous products

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INNOVATION

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CHEESE POWDER - A NATURAL FLAVOUR AND TASTE ENHANCER FOR NUMEROUS PRODUCTS.

Article by journalist, cand. scient. Birger Pedersen

Scientists from University of Copenhagen, Department of Food Science are, in co-operation with Lactosan A/S, responsible for the process of identifying the flavour profiles of various Cheese Powders.

Cheese Powder is found in a wide range of products such as ready meals, sauces, soups, desserts, snacks, cakes, biscuits, sauces, in spring rolls, in crisp bread and in the UK market in popular biscuits. The functionality of Cheese Powders is in brief, to act as taste and flavour providers and enhancers.

When it comes to the question about the different components of the Cheese Powders and the features which characterize the odour, taste and flavour profiles of the individual cheese types, then we have so far had no investigations to rely on.

This is, however, now being rectified through a research project which began in 2008 and ended in December last year. Denmark is among the world leaders when it comes to Cheese Powder production, and one of the leading companies in the market is Lactosan. Lactosan's R & D Manager, Inger Hansen, immediately responded to the idea of a collaboration with the Department of Food Science, University of Copenhagen, represented by Professor Ylva Ardo (project leader), post. doc. Camilla Varming, associate professor Mikael Agerlin Petersen and post. doc. Lene Tranberg Andersen.

Examination of three Cheese Powder types

Cheese Powders are made from cheese, water and melting salt which are melted, pasteurized and spray-dried. To some extent Cheese Powder contains the same aroma components as the cheeses from which they are made, but modified by the changes occuring during the processing of cheese powders. However, both the chemical and sensory characteristics of flavour of Cheese Powders are very poorly described in the literature.

Therefore, we started to perform sensory analyses of different kinds of Cheese Powders made from matured cheeses and then compared the sensory characteristics with the flavour compounds that we analyzed chemically " says Camilla Varming. Cheese Powder gives cheese flavour but processing Cheese Powders from well-matured cheeses gives us even more flavour components. Some of them have even a flavour and taste enhancing effect.

The researchers examined three different Cheese Powder types:

1. Blue Cheese Powder from Blue types of cheeses
2. Cheese Powder from surface-ripened cheeses
3. Cheese Powder from hard types of cheeses

The investigations resulted in the following knowledge when the researchers compared the aroma compounds with the sensory descriptions:

The Blue Cheese Powder was characterized by a higher content of many aroma compounds, mainly esters and ketones, which are typical compounds produced by the various penicillium fungi species in blue mould cheeses. These compounds corresponded to the sensory properties of "fruity" and "blue mould"odour and flavour.

The Cheese Powders made from surface-ripened cheeses were characterized by various sulfur compounds and indole and phenol. These aroma compounds are typical products from the microflora of the surface-ripening and correspond to the sensory properties of "smear" odour and flavour.

Finally, the Cheese Powders made from hard type of cheeses were characterized by a lower content of aroma compounds and with sensory properties such as "harmony", "umami" and "kokumi".

Kokumi is a flavour and taste enhancing quality - a Japanese concept meaning deliciousness.

Overall, it appeared then that there were big differences in the odour, taste and flavour profiles of the three different kinds of Cheese Powders.

We are now aware about the breadth of compounds contained in Cheese Powders, and how we can make new combinations of the naturally occurring flavour compounds for flavour and taste enhancement" says Inger Hansen, R&D Manager at Lactosan A/S.

"Besides this study we have by means of gas chromatography-olfactometry, where the nose is used as a detector, determined which aroma compounds are the most important for the odour of the three Cheese Powders. Furthermore, the sensory profiling of the three Cheese Powders are correlated to the chemical taste components of free fatty acids and amino acids" says Camilla Varming.

Beyond the cheese taste, cheese odour and the flavour and taste enhancing element, the advantage of using Cheese Powder is the very easy handling and the almost infinite shelf life without affecting the taste.

Great satisfaction at Lactosan

The objective was to achieve an identification of flavour compounds in matured cheeses to use as natural flavour and taste enhancement, and we succeeded.

"Yes, the co-operation has been absolutely fantastic, the exchange of knowledge with the scientists has been incredibly rewarding, so we dream of several projects - the next project could for instance be "Cheese Powder production without the use of melting salts" - and we should very much like to continue working with University of Copenhagen, "states the Lactosan Research and Development Manager.